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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,973	04/18/2006	Ashok Rao	100325.0199US	8080

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EXAMINER	
AKRAM, IMRAN	
ART UNIT	PAPER NUMBER
1795	
MAIL DATE	DELIVERY MODE
12/24/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/541,973	RAO ET AL.	
	Examiner	Art Unit	
	IMRAN AKRAM	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 October 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) *1-8* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 10/2/09 have been fully considered but they are not persuasive. The reference rejections still apply, albeit in different form. Applicant has provided three enumerated arguments; the rebuttal of each is delineated below.

2. In regards to the first argument, Applicant asserts that the claim preamble should be considered in its entirety and that the newly amended claim compares the steam consumption reduction that of the prior art—namely, a plant that does not bypass the second portion around the first reactor. Examiner agrees that the preamble should be considered when defining the claimed subject matter. However, in this particular case, the recitation of comparison between the claimed invention and something else, as well as the relative term "reducing steam consumption," is not patentably distinct from the reference invention. As cited in the rejection, the Rudolph reference does bypass the second portion around the first shift reactor. Attesting that the current claimed invention reduces steam consumption by doing that which Rudolph clearly does not make it patentably distinct.

3. In regards to the second argument, Examiner does agree that the Rudolph reference does not explicitly teach that steam is the only source of water added to the first portion. However, as the rejection below indicates, it is either implicitly taught by Rudolph or obvious to have done so.

4. In regards to all three arguments taken together, Examiner is somewhat confused by the Applicant's reasoning. A large basis for the arguments seems to be the

importance of reducing steam consumption in the current invention as compared to previous inventions. Yet, the Rudolph reference is thought to teach away from this by obviating the necessity for steam addition at all. While it is true that condensate can at best saturate the raw gas and steam is capable of being added beyond that point, this is the very motivation in Rudolph for providing both. By saturating the raw gas with water vapor first, minimal amount of steam is used for the water necessary in the shift reaction. That is what is meant by "the addition of steam can be avoided or much reduced if the raw gas produced by the pressure gasification of coal is saturated with water vapor before it is fed to the shift conversion equipment" in Rudolph. It is unclear then how Rudolph does not reduce steam consumption in the manner in which the invention does as Rudolph discloses all of the other claimed features in addition to reducing steam consumption by adding water vapor. For the purposes of rejecting the claims as they are now written, though, Rudolph discloses that the water vapor addition can be avoided.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 9-14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rudolph (US 4,161,393).

9. Regarding claim 9, Rudolph discloses providing a first shift reactor **17** and a second shift reactor **22**; splitting a syngas from a gasification unit into a first portion **2** and a second portion **20** (column 3, lines 25-27), combining only the first portion with steam (in **10**) sufficient to support a shift reaction to form a steam-containing first portion (column 3, lines 35-42), and feeding the steam-containing first portion to the first shift

reactor to form a first shift reactor effluent (column 3, lines 43-48); bypassing the second portion around the first shift reactor (see figure) and combining the first shift reactor effluent with the second portion to form a mixed feed gas (column 3, lines 49-52), and reacting the mixed feed gas in the second shift reactor to form a second shift reactor effluent (column 3, lines 52-55); wherein the second portion is combined with the first shift reactor effluent in an amount effective to reduce steam consumption in the first and second shift reactors (column 1, lines 20-25) as compared to a plant operating without the step of bypassing the second portion around the first shift reactor; and operating the first and second shift reactors at about the same temperature (column 1, lines 59-68). Rudolph does not disclose that steam is the only source of water added to the first portion since saturator **10** is used to add water vapor to the first portion in addition to the steam added. However, Rudolph does disclose that the saturator **10** can be omitted when the enriching of water vapor is not desired (column 4, lines 4-10). In the cited paragraph, Rudolph discloses that conduits **8** and **12** would then be directly connected. Steam input **13** remains unaffected by this change. Therefore, it is either inherent in Rudolph that the entirety of the water required for the shift-conversion comes from the steam source when the water vapor addition means is removed or it would have been obvious to one having ordinary skill in the art at the time of invention to add enough steam to the first portion of Rudolph to provide the necessary water for shift-conversion when there is no water vapor addition means.

10. Regarding claims 10 and 11, Rudolph discloses that the second portion of the syngas is combined with the first shift reactor effluent in an amount effective to reduce steam demand by at least 35% (column 2, lines 60-68).

11. Regarding claim 12, Rudolph discloses that the second portion has a volume of 50 to 91 volume percent of the syngas from the gasification unit (column 1, lines 59-62).

12. Regarding claim 13, Rudolph discloses providing a bypass **23** that combines a third portion of the syngas with the second shift reactor effluent (column 3, lines 55-57).

13. Regarding claim 14, Rudolph discloses that the syngas includes carbon monoxide and hydrogen in a molar ratio of at least 2:1 (column 4, lines 31-36).

14. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rudolph as applied to claim 9 above, and further in view of Schmid (US 4,159,236).

15. Rudolph discloses a third shift reactor **24** that inputs the effluent of the second shift reactor for the removal of CO, but does not disclose the use of an acid removal unit. Schmid--in an invention for a gasification process—discloses a shift reactor/acid gas removal unit combination as well as an additional acid gas removal unit for the removal of CO, CO_2, and H_2 (column 10, line 67 to column 11, line 6). It would have been obvious to one having ordinary skill in the art at the time of invention to replace the third shift reactor of Rudolph with the shift reactor/acid removal unit of Schmid or to add the acid removal unit of Schmid to Rudolph to separate out the undesirable products.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IMRAN AKRAM whose telephone number is (571)270-3241. The examiner can normally be reached on 10-7 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Imran Akram/
Examiner, Art Unit 1795
/Jennifer K. Michener/
Supervisory Patent Examiner, Art Unit 1795